

Laserforming of 3D Features

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Abstract. The aim of the research presented in this paper is to investigate the feasibility of generating 3D features in sheet metal blanks using laser forming techniques. Aiming for systematic process planning and a good process control capability, only the temperature gradient mechanism is considered for this purpose.

The research has been performed on a 6 kW CO₂ laser CNC platform. In a first part, bending along curved lines and bending close to edges are investigated. In a second part, these findings are applied for the creation of a louver. A dimensional measurement system is used for analyzing the geometric dimensional characteristics of the formed shapes. It is found that louvers can be made as a local 3D feature in a sheet metal blank.

Based on these initial results, it can be concluded that form features, which are traditionally generated by means of form tools on a punching machine, can to some extend also be obtained by means of industrial lasers, widening the application range of these machine tools.